

ABSTRACT OF THE DISCLOSURE

The invention provides methods for identifying polypeptides. The method can include the steps of simultaneously determining the mass of a subset of parent polypeptides from a population of polypeptides and the mass of fragments of the subset of parent polypeptides; comparing the determined masses to an annotated polypeptide index; and identifying one or more polypeptides of the annotated polypeptide index having the determined masses. The method can further include the steps of determining one or more additional characteristics associated with one or more of the parent polypeptides; comparing the determined characteristics to the annotated polypeptide index; and optionally repeating the steps one or more times, wherein a set of characteristics is determined that identifies a parent polypeptide as a single polypeptide in the annotated polypeptide index. The method can additionally include the step of quantitating the amount of the identified polypeptide in a sample containing the polypeptide.